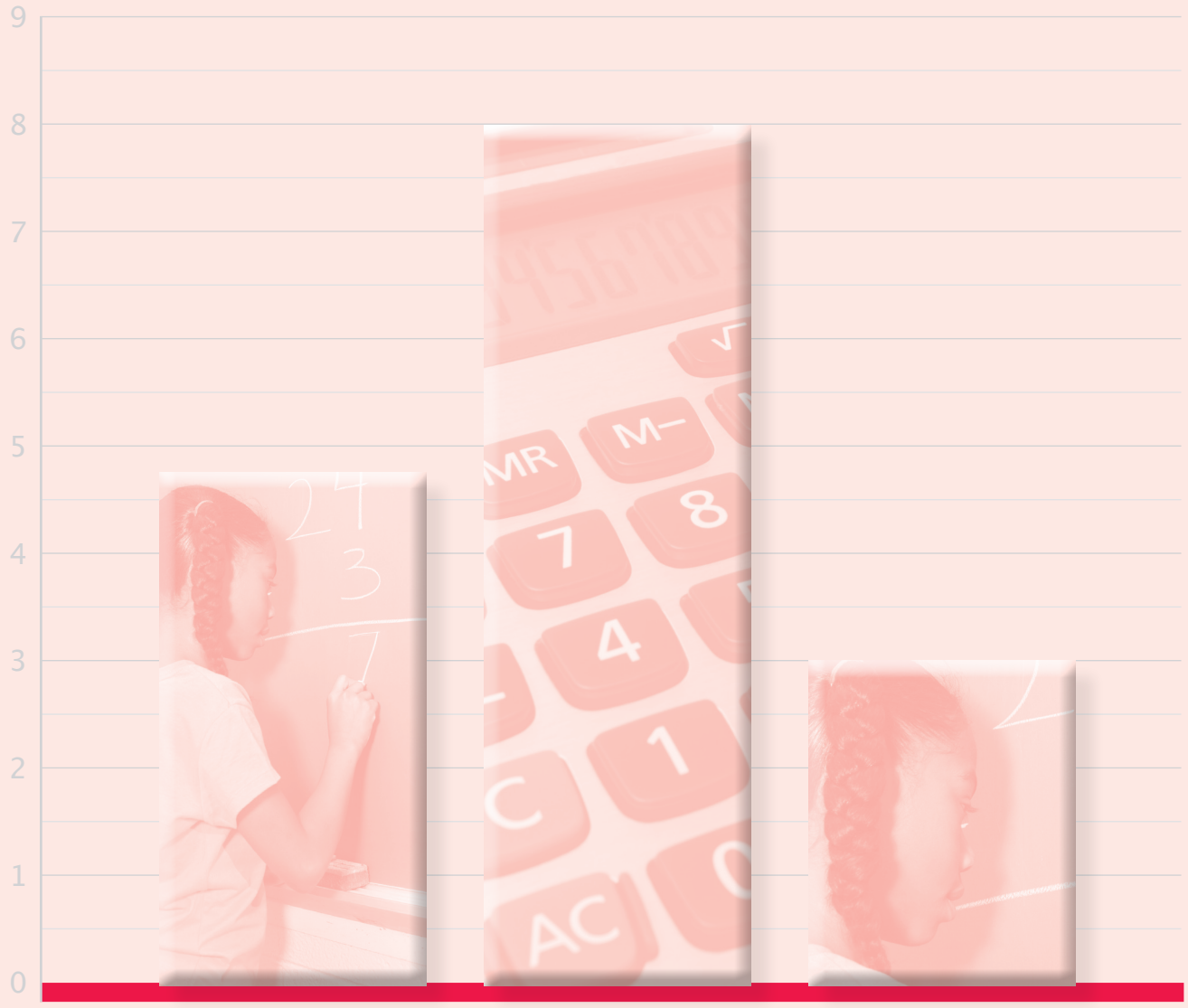
4th
5th
6th
7th
8th

Grade 6

meap™
Michigan Educational Assessment Program

Item Descriptors



MATHEMATICS

FALL 2013

MICHIGAN STATE BOARD OF EDUCATION
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NOTE: For each item listed throughout this booklet, the first statement is a summary of the Michigan Grade Level Content Expectation (GLCE) and the second statement is the descriptor for the item's stem or question.

Portions of this work were previously published.

Printed in the United States of America.

Students were instructed to read the directions below silently as the test administrator read them aloud.

PART 1

DIRECTIONS:

In this part, you will answer multiple-choice mathematics questions. Some questions will ask you to view a picture, chart, or other mathematics-related information. Use that information with what you know to answer the question. You may **NOT** use a calculator for this part of the test.

You must mark all of your answers in Part 1 of your **Answer Document** with a No. 2 pencil. You may underline, circle, or write in this test booklet to help you, but nothing marked in this test booklet will be scored. No additional paper may be used.

Mark only one answer for each question. Completely fill in the corresponding circle on your **Answer Document**. If you erase an answer, be sure to erase completely. Remember that if you skip a question in the test booklet, you need to skip the answer space for that question on the **Answer Document**. If you are not sure of an answer, mark your **best** choice.

A sample question is provided for you below.

Sample Multiple-Choice Question:

Marty wants to put 75 CDs into cases. Each case holds exactly 8 CDs. What is the **least** number of cases that Marty will need to hold all his CDs?

A 8

B 9

C 10

D 11

For this sample question, the correct answer is **C**. Circle **C** is filled in for the sample question on your **Answer Document**.

Once you have reached the word **STOP** in your test booklet, do **NOT** go on to the next page. If you finish early, you may go back and check your work in Part 1 of the test **ONLY**. Check to make sure that you have answered every question. Do **NOT** look at any other part of the test.

NOTE: The directions for Part 2 are the same as the above instructions, but with calculators allowed.

1 **N.MR.05.02:** Relate division of whole numbers with remainders to the form a = bq + r, e.g., 34 divided by 5 = 6 r 4, so 5 x 6 + 4 = 34; note remainder (4) is less than divisor (5).

Identify multiplication equation that corresponds to given division equation.

A multiplied quotient by remainder, subtracted divisor

B multiplied divisor by remainder, added quotient

C multiplied divisor by quotient then subtracted remainder

D correct

2 **N.MR.05.01:** Understand the meaning of division of whole numbers, with and without remainders; relate division to fractions and to repeated subtraction.

Identify division equation modeled on number line.

A a ÷ b = c means a ÷ c = b

B a ÷ b = c means a ÷ 1 = a

C correct

D a ÷ b = c means a ÷ a = 1

3 **N.MR.05.01:** Understand the meaning of division of whole numbers, with and without remainders; relate division to fractions and to repeated subtraction.

Translate division expression into fraction.

A reciprocal

B correct

C a ÷ b = b 1/a

D a ÷ b = a 1/b

4 **N.MR.05.15:** Multiply a whole number by powers of 10: 0.01, 0.1, 1, 10, 100, 1000; and identify patterns.

Multiply 2-digit number by power of 10.

A one-thousandth of correct product

B one-hundredth of correct product

C one-tenth of correct product

D correct

5 **G.GS.05.05:** Know that angles on a straight line add up to 180 degrees and angles surrounding a point add up to 360 degrees; justify informally by "surrounding" a point with angles.

Determine sum of angles surrounding a point.

A less than correct value

B less than correct value

C less than correct value

D correct

6 **N.MR.05.03:** Write mathematical statements involving division for given situations.

Identify operation in contextualized setting.

A added instead of divided

B multiplied instead of divided

C correct

D subtracted instead of divided

7 **N.FL.05.04:** Multiply a multi-digit number by a two-digit number; recognize and be able to explain common computational errors such as not accounting for place value.

Multiply a 3-digit by a 2-digit number.

A under by a factor of 10

B multiplied tens place as ones place

C 10 less than product

D correct

8 **N.ME.05.11:** Given two fractions, e.g., 1/2 and 1/4, express them as fractions with a common denominator, but not necessarily a least common denominator, e.g., 1/2 = 4/8 and 3/4 = 6/8; use denominators less than 12 or factors of 100.

Calculate a common denominator for two fractions.

A added numerators

B added denominators

C multiplied numerators

D correct

9 **G.GS.05.05:** Know that angles on a straight line add up to 180 degrees and angles surrounding a point add up to 360 degrees; justify informally by "surrounding" a point with angles.

Find measure of angle surrounding a point given 3 other angles.

A sum of 2 given angles

B third given angle

C correct

D over by 10 degrees

10 **N.ME.05.11:** Given two fractions, e.g., 1/2 and 1/4, express them as fractions with a common denominator, but not necessarily a least common denominator, e.g., 1/2 = 4/8 and 3/4 = 6/8; use denominators less than 12 or factors of 100.

Identify equivalent fraction.

A non-equivalent fraction

B a/b = (a - 2)/(b - 2)

C correct

D a/b = (a + 4)/(b + 4)

11 **G.GS.05.04:** Find unknown angles in problems involving angles on a straight line, angles surrounding a point, and vertical angles.

Find an unknown angle on a straight line.

A one of given angles

B correct

C sum of given angles

D sum of angles on line = 360 degrees

12 **M.UN.05.04:** Convert measurements of length, weight, area, volume, and time within a given system, using easily manipulated numbers.

Convert inches to feet.

A under by 1 foot

B correct

C over by 1 foot

D over by 2 feet

13 **N.ME.05.11:** Given two fractions, e.g., 1/2 and 1/4, express them as fractions with a common denominator, but not necessarily a least common denominator, e.g., 1/2 = 4/8 and 3/4 = 6/8; use denominators less than 12 or factors of 100.

Identify equivalent addition of fractions expression.

A one equivalent fraction, one non-equivalent fraction

B correct

C two non-equivalent fractions

D one equivalent fraction, one non-equivalent fraction

14 **N.ME.05.12:** Find the product of two unit fractions with small denominators using area model.

Find product of unit fractions using area model.

A 1st factor

B 1st factor + 2nd factor

C 2nd factor × 2nd factor

D correct

15 **G.GS.05.05:** Know that angles on a straight line add up to 180 degrees and angles surrounding a point add up to 360 degrees; justify informally by "surrounding" a point with angles.

Determine sum of angles surrounding a point.

A less than correct value

B less than correct value

C less than correct value

D correct

16 **M.UN.05.02:** Know the units of measure of volume: cubic centimeter, cubic meter, cubic inches, cubic feet, cubic yards, and use their abbreviations.

Identify unit of volume.

A unit of length

B unit for area

C correct

D not unit of volume

17 **N.MR.05.19:** Solve contextual problems that involve finding sums and differences of fractions with unlike denominators, using knowledge of equivalent fractions.

Add fractions from same family in context.

A multiplied numerators and denominators

B added numerators and denominators

C correct denominator, but did not convert numerators

D correct

18 **N.FL.05.18:** Use mathematical statements to represent an applied situation involving addition and subtraction of fractions.

Translate text into addition expression with fractions.

A divided

B subtracted

C multiplied

D correct

19 **N.FL.05.18:** Use mathematical statements to represent an applied situation involving addition and subtraction of fractions.

Translate text to subtraction expression with fractions.

A added

B correct

C divided

D multiplied

20 **N.MR.05.17:** Multiply one-digit and two-digit whole numbers by decimals up to two decimal places.

Multiply one-digit whole number by a decimal.

A under by 0.1

B correct

C over by factor of 10

D over by factor of 100

21 **N.FL.05.14:** Add and subtract fractions with unlike denominators through 12 and/or 100, using the common denominator that is the product of the denominators of the 2 fractions, e.g., 3/8 + 7/10: use 80 as the common denominator.

Add two fractions from different families by finding a common denominator.

A correct denominator, but did not convert numerators

B added numerators and denominators

C multiplied both fractions by the same number when converting to common denominator

D correct

22 **N.FL.05.14:** Add and subtract fractions with unlike denominators through 12 and/or 100, using the common denominator that is the product of the denominators of the 2 fractions, e.g., 3/8 + 7/10: use 80 as the common denominator.

Add fractions with unlike denominators.

A added numerators, multiplied denominators

B added numerators and denominators

C half of correct value

D correct

23 **N.MR.05.13:** Divide a fraction by a whole number and a whole number by a fraction, using simple unit fractions.

Divide fraction by whole number.

A correct

B $a/b \div c = 1/b + 1/c$

C $a/b \div c = c/b$

D $a/b \div c = b/c$

24 **N.MR.05.13:** Divide a fraction by a whole number and a whole number by a fraction, using simple unit fractions.

Divide a fraction by a whole number.

A reciprocal

B multiplied

C incorrect quotient

D correct

25 **N.MR.05.15:** Multiply a whole number by powers of 10: 0.01, 0.1, 1, 10, 100, 1000; and identify patterns.

Multiply 2-digit number by power of ten.

A under by factor of 10

B correct

C over by factor of 10

D over by factor of 1,000

26 **N.MR.05.03:** Write mathematical statements involving division for given situations.

Translate text into division expression.

A multiplied

B correct

C subtracted

D added

27 **N.MR.05.19:** Solve contextual problems that involve finding sums and differences of fractions with unlike denominators, using knowledge of equivalent fractions.

Subtract fractions in context.

A correct

B multiplied numerators and denominators

C subtrahend

D subtracted numerators and denominators, simplified

28 **N.MR.05.19:** Solve contextual problems that involve finding sums and differences of fractions with unlike denominators, using knowledge of equivalent fractions.

Add two fractions in context.

A multiplied numerators and denominators

B multiplied numerators, added denominators

C added numerators and denominators

D correct

29 **N.MR.05.21:** Solve for the unknown in such equations as: 1/4 + x = 7/12.

a/b + x = c/d

A (c - a)/(d - b)

B (c - b)/c

C (c - a)/d

D correct

30 **N.MR.05.21:** Solve for the unknown in such equations as: 1/4 + x = 7/12.

Solve for unknown in addition equation.

A given addend

B incorrect addend

C correct

D given addend + sum

31 **M.UN.05.04:** Convert measurements of length, weight, area, volume, and time within a given system, using easily manipulated numbers.

Convert feet to inches.

A 1 foot = 120 inches

B 1 foot = 100 inches

C correct

D 1 foot = 10 inches

32 **M.UN.05.02:** Know the units of measure of volume: cubic centimeter, cubic meter, cubic inches, cubic feet, cubic yards, and use their abbreviations.

Identify unit of measure for volume.

A unit of length

B unit for area

C correct

D not unit of volume

33 **N.ME.05.08:** Understand the relative magnitude of ones, tenths, and hundredths and the relationship of each place value to the place to its right, e.g., one is 10 tenths, one tenth is 10 hundredths.

Convert tenths to hundredths.

A 1/10 = 10 tens

B 1/10 = 10 ones

C correct

D 1/10 = 10/1,000

34 **M.UN.05.04:** Convert measurements of length, weight, area, volume, and time within a given system, using easily manipulated numbers.

Translate meters into millimeters.

A 1 meter = 1 millimeter

B 1 meter = 10 millimeters

C 1 meter = 100 millimeters

D correct

35 **N.ME.05.11:** Given two fractions, e.g., 1/2 and 1/4, express them as fractions with a common denominator, but not necessarily a least common denominator, e.g., 1/2 = 4/8 and 3/4 = 6/8; use denominators less than 12 or factors of 100.

Identify equivalent fractions.

A same numerators, added denominators

B a/b = (a + 4)/(b + 4); c/d = (c + 5)/(d + 5)

C same numerators, multiplied denominators

D correct

36 **G.GS.05.02:** Measure angles with a protractor and classify them as acute, right, obtuse, or straight.

Classify angle type given the graphic of angle.

A correct

B incorrect type of angle

C incorrect type of angle

D incorrect type of angle

37 **G.GS.05.02:** Measure angles with a protractor and classify them as acute, right, obtuse, or straight.

Classify angle type given the graphic of the angle.

A incorrect type of angle

B correct

C incorrect type of angle

D incorrect type of angle

38 **G.GS.05.02:** Measure angles with a protractor and classify them as acute, right, obtuse, or straight.

Identify acute angle.

A obtuse angle

B correct

C obtuse angle

D straight angle

39 **N.ME.05.10:** Understand a fraction as a statement of division, e.g., 2 divided by 3 = 2/3, using simple fractions and pictures to represent.

Convert a fraction to a decimal.

A a/b = a.b

B a/b = b/a

C a/b = b.a

D correct

40 **G.GS.05.05:** Know that angles on a straight line add up to 180 degrees and angles surrounding a point add up to 360 degrees; justify informally by "surrounding" a point with angles.

Find measure of angle surrounding a point given 2 other angles.

A sum of angles surrounding a point = 127°

B sum of angles surrounding a point = 180°

C sum of angles surrounding a point = 300°

D correct

41 **N.MR.05.15:** Multiply a whole number by powers of 10: 0.01, 0.1, 1, 10, 100, 1000; and identify patterns.

Multiply whole numbers by power of ten.

A correct

B over by factor of 10

C over by factor of 100

D over by factor of 1,000

42 **G.TR.05.01:** Associate an angle with a certain amount of turning; know that angles are measured in degrees; understand that 90 degrees, 180 degrees, 270 degrees, and 360 degrees are associated, respectively, with 1/4, 1/2, 3/4, and full turns.

Translate rotation of circle into degrees.

A full turn = 100 degrees

B full turn = 180 degrees

C correct

D full turn = 720 degrees

43 **N.ME.05.10:** Understand a fraction as a statement of division, e.g., 2 divided by 3 = 2/3, using simple fractions and pictures to represent.

Translate fraction to decimal.

A a/b = 0.ab

B correct

C a/b = a.b

D a/b = b.a

44 **G.TR.05.01:** Associate an angle with a certain amount of turning; know that angles are measured in degrees; understand that 90 degrees, 180 degrees, 270 degrees, and 360 degrees are associated, respectively, with 1/4, 1/2, 3/4, and full turns.

Know the number of degrees in a turn.

A number of degrees in circle = 60

B number of degrees in circle = 120

C number of degrees in circle = 180

D correct

45 **G.GS.05.05:** Know that angles on a straight line add up to 180 degrees and angles surrounding a point add up to 360 degrees; justify informally by "surrounding" a point with angles.

Identify the number of degrees in the angles surrounding a point.

A fewer than correct number of degrees

B fewer than correct number of degrees

C fewer than correct number of degrees

D correct

46 **M.UN.05.03:** Compare the relative sizes of one cubic inch to one cubic foot, and one cubic centimeter to one cubic meter.

Select greatest volume.

A greatest measure, intermediate measurement

B least measurement

C least measure, intermediate measurement

D correct

47 **M.PS.05.10:** Solve applied problems about the volumes of rectangular prisms using multiplication and division and using the appropriate units.

Find the volume of a rectangular prism.

A l + w + h

B area of one face

C correct

D surface area

48 **N.FL.05.20:** Solve applied problems involving fractions and decimals; include rounding of answers and checking reasonableness.

Subtract with decimals in context.

A added

B subtracted 1/10 of subtrahend

C subtracted whole numbers, but added decimal portion of subtrahend

D correct

49 **N.FL.05.05:** Solve applied problems involving multiplication and division of whole numbers.

Multiply (or use repeated addition) in context.

A subtracted

B added

C incorrect product

D correct

50 **N.FL.05.20:** Solve applied problems involving fractions and decimals; include rounding of answers and checking reasonableness.

Solve fraction problem in context.

A n - (1/a)n - (1/b)n = n - a - b

B n - (1/a)n - (1/b)n = (1/a)n - (1/b)n

C n - (1/a)n - (1/b)n = n - (a × b)

D correct

51 **N.FL.05.20:** Solve applied problems involving fractions and decimals; include rounding of answers and checking reasonableness.

Estimate total cost of school supplies listed in table.

A rounded down all prices to whole dollar

B correct

C rounded all values up to the whole dollar

D overestimate by $3

52 **M.UN.05.01:** Recognize the equivalence of 1 liter, 1000 ml and 1000 cubic cm and include conversions among liters, milliliters, and cubic centimeters.

Convert liters to milliliters given 1 liter = 1,000 milliliters.

A 1 liter = 0.001 milliliters

B 1 liter = 10 milliliters

C 1 liter = 100 milliliters

D correct

53 **N.FL.05.05:** Solve applied problems involving multiplication and division of whole numbers.

Multiply and divide in context.

A correct

B difference of two given numbers

C quotient of two given numbers, but did not multiply first

D one of given numbers

54 **M.PS.05.10:** Solve applied problems about the volumes of rectangular prisms using multiplication and division and using the appropriate units.

Calculate volume of the rectangular prism.

A correct

B surface area

C surface area of visible faces

D length + width + height

55 **D.RE.05.01:** Read and interpret line graphs, and solve problems based on line graphs, e.g., distance-time graphs, and problems with two or three line graphs on same axes, comparing different data.

Interpret line graph to determine greatest rate of increase.

A decrease

B correct

C constant rate

D increase, but not greatest increase

56 **D.RE.05.01:** Read and interpret line graphs, and solve problems based on line graphs, e.g., distance-time graphs, and problems with two or three line graphs on same axes, comparing different data.

Interpret line graph to determine the amount spent.

A incorrect year

B correct

C incorrect year

D incorrect year

57 **D.RE.05.01:** Read and interpret line graphs, and solve problems based on line graphs, e.g., distance-time graphs, and problems with two or three line graphs on same axes, comparing different data.

Interpret line graph to determine change in temperature over time.

A correct

B used temperature at end of graph, not end of given period of time

C y-intercept and starting temperature

D temperature at end of period

58 **M.UN.05.02:** Know the units of measure of volume: cubic centimeter, cubic meter, cubic inches, cubic feet, cubic yards, and use their abbreviations.

Identify the unit of volume.

A unit of mass

B unit of area

C unit of temperature

D correct

59 **D.RE.05.01:** Read and interpret line graphs, and solve problems based on line graphs, e.g., distance-time graphs, and problems with two or three line graphs on same axes, comparing different data.

Interpret a line graph with context of cell phone cost per minute.

A least value on y-axis

B cost of x - 10 minutes

C correct

D greatest value on y-axis

60 **D.RE.05.02:** Construct line graphs from tables of data; include axis labels and scale.

Match given table to line graph.

A second correct point, transposed first and third point

B first point correct, transposed second and third points

C correct

D two correct points, one incorrect point

4th

5th

6th

7th

8th

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